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EXECUTIVE SUMMARY, DEVELOPMENT OF CRITERIA TO CONTROL OCEAN DUMPING

INTERSTATE ELECTRONICS CORPORATION

PREPARED FOR
ENVIRONMENTAL PROTECTION AGENCY

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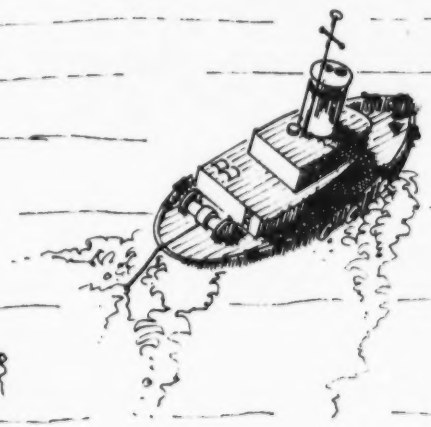
Executive Summary

DEVELOPMENT of CRITERIA to CONTROL OCEAN DUMPING



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15. Supplementary Notes

16. Abstracts

This report provides a brief executive summary of the ocean waste disposal study undertaken by Interstate Electronics Corporation. This special study concentrated on waste disposal practices in six geographic areas of the united states.

17. Key Words and Document Analysis. 17a. Descriptors

Ocean Waste Disposal
Coastal zone waters
Costal zone management
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Dredge Spoil disposal
Municipal waste

17b. Identifiers/Open-Ended Terms

17c. COSATI Field/Group

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EPA OCEAN WASTE DISPOSAL SURVEY
EXECUTIVE SUMMARY

INTRODUCTION

The new law on ocean dumping, "Marine Protection, Research and Sanctuaries Act" (PL 92-532), October 23, 1972, strictly regulates the dumping or transportation for dumping of any material into the oceans. To carry out this mandate, the Environmental Protection Agency was authorized to promulgate regulations for the issuance of permits for dumping and to designate sites where dumping is permitted. Permits issued "shall designate and include (1) the type of material authorized to be transported for dumping or to be dumped and (2) the amount of material authorized to be transported for dumping or to be dumped".

Early in 1973, the EPA established the Ocean Disposal Permit Program. This organization immediately published an interim criteria "Guidelines for the Application of Regulations and Criteria for the Regulation of Dumping, or Transportation for Dumping of Waste Materials into the Ocean in Order to Prevent Degradation of the Marine Environment". Existing disposal sites were assigned interim status.

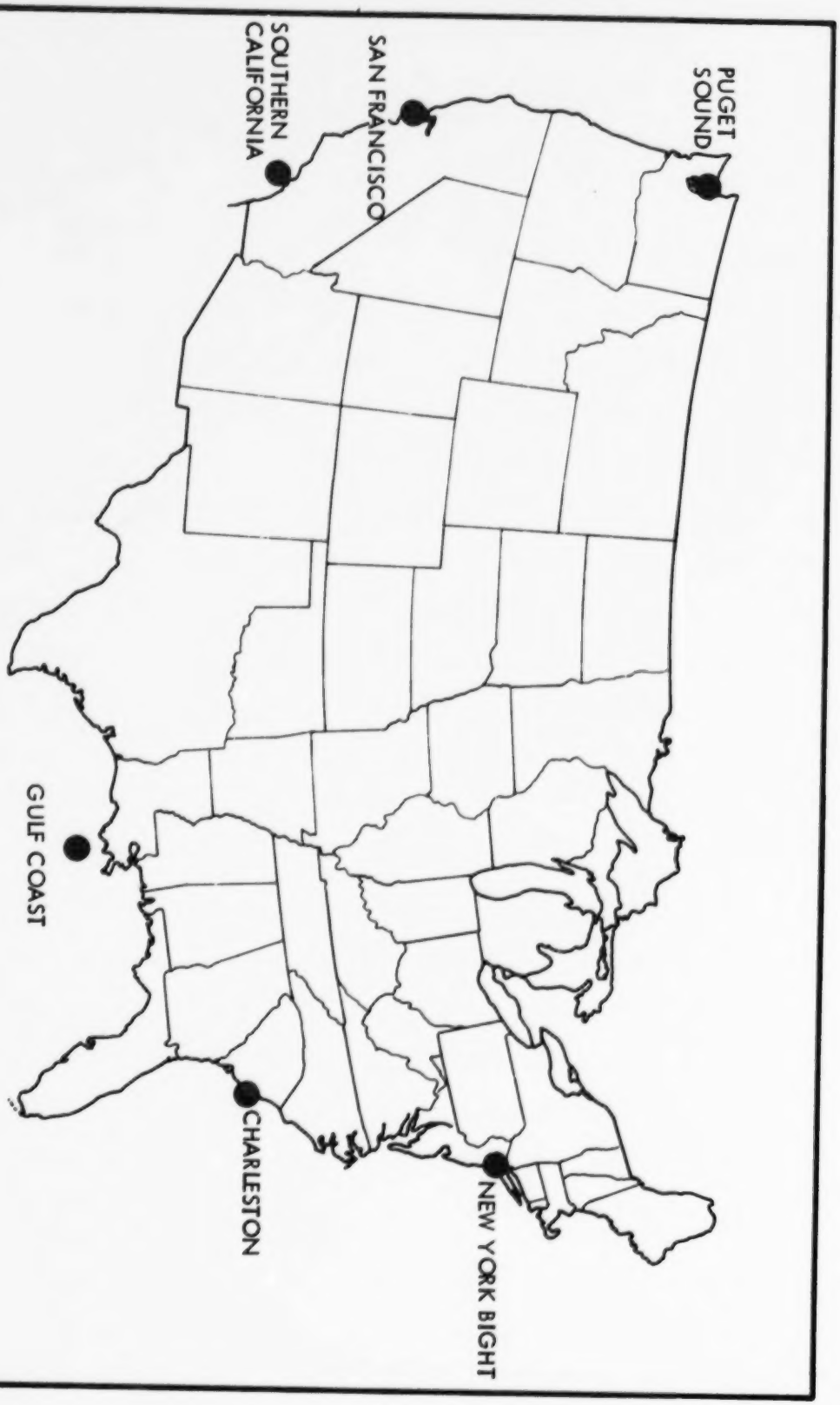

FIGURE 1 OCEAN DISPOSAL CASE STUDY AREAS

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To ensure that the final criteria will be based on conclusive information, the Ocean Disposal Program initiated a plan to "develop criteria tc control ocean dumping". The initial goal was to collect information and supporting documentation that "shall provide the rationale for the final criteria as well as site selection for ocean disposal".

OCEAN WASTE DISPOSAL STUDY

A contract (68-01-0796) was negotiated with Interstate Electronics Corporation (IEC) Oceanics Division (now Environmental Engineering Division), to perform a special study reviewing the historical aspects of ocean disposal in selected case study areas. Six geographical areas were selected to provide a representative cross section of ocean waste disposal practices in the United States. The areas studied, shown in Figure 1, include a variety of dumped material from dredge spoil to acid, and climatic zones from sub-tropical to temperate.

DIRECTORY

During a study of coastal zone water quality monitoring, IEC contacted and established a computer reference file on more than 1,500 managers, engineers and scientists that were involved in water quality monitoring. This master file was sorted to generate a list of individuals involved in ocean dumping activities. This retrieval of key names established a special

ocean dumping contact list which was used for telephone interviews and for initial contacts during the field survey. In addition, the field survey team contacted an extensive number of individuals who are working on ocean disposal problems or in closely associated environmental science fields. A directory was prepared from the master computer file and published as Report 4460C1543, "Directory of Managers, Engineers and Scientists in Ocean Waste Disposal and Related Environmental Science Fields".

BIBLIOGRAPHY

In conjunction with establishment of the directory, a bibliography of current, critical documents pertaining to ocean disposal was compiled. Over 400 documents were accessioned (74 abstracted) and published as Report 4460C1542, "A Bibliography on Ocean Waste Disposal". This research bibliography was limited primarily to recent publications (1968 to 1973). As with any interim document, omissions will occur. To facilitate the incorporation of new documents, and for corrections, computer entry forms were provided in each document distributed. The final document is available on a computerized retrieval system permitting recovery by a wide range of key words and descriptors derived from the "Thesaurus of Water Resources Terms" (1971).

FIELD STUDY REPORTS

The findings of the field investigation phase of the study were published as Report 4460C1541, "Ocean Waste Disposal in Selected Geographic Areas". Highlights from that report are presented, by area, in the following paragraphs:

NEW YORK BIGHT

Six separate dumping grounds in the Atlantic Ocean are designated for the disposal of mud and one-man stone, cellar dirt, sewer sludge, wrecks, waste acid, and chemical toxic wastes. The locations of these sites, and the major significant ecosystem alterations (shellfish closures) are shown in Figure 2. Ocean dumping is believed to be occurring in locations other than the prescribed dump areas. The extent and type of the violations are not known because of the present lack of a suitable monitoring system. Early (short) dumping is attributable to rough seas, inclement weather, and possibly faulty navigation. The findings of this study area are also presented in detail in Report 4460C1559, "Ocean Waste Disposal in the New York Bight".

CHARLESTON, SOUTH CAROLINA

The survey centered around the Harbor of Charleston, which is a primary source of income to the city and surrounding areas. Harbor dredging is of major importance to the economy, and ocean disposal of dredge spoil has been done since 1875; however, the

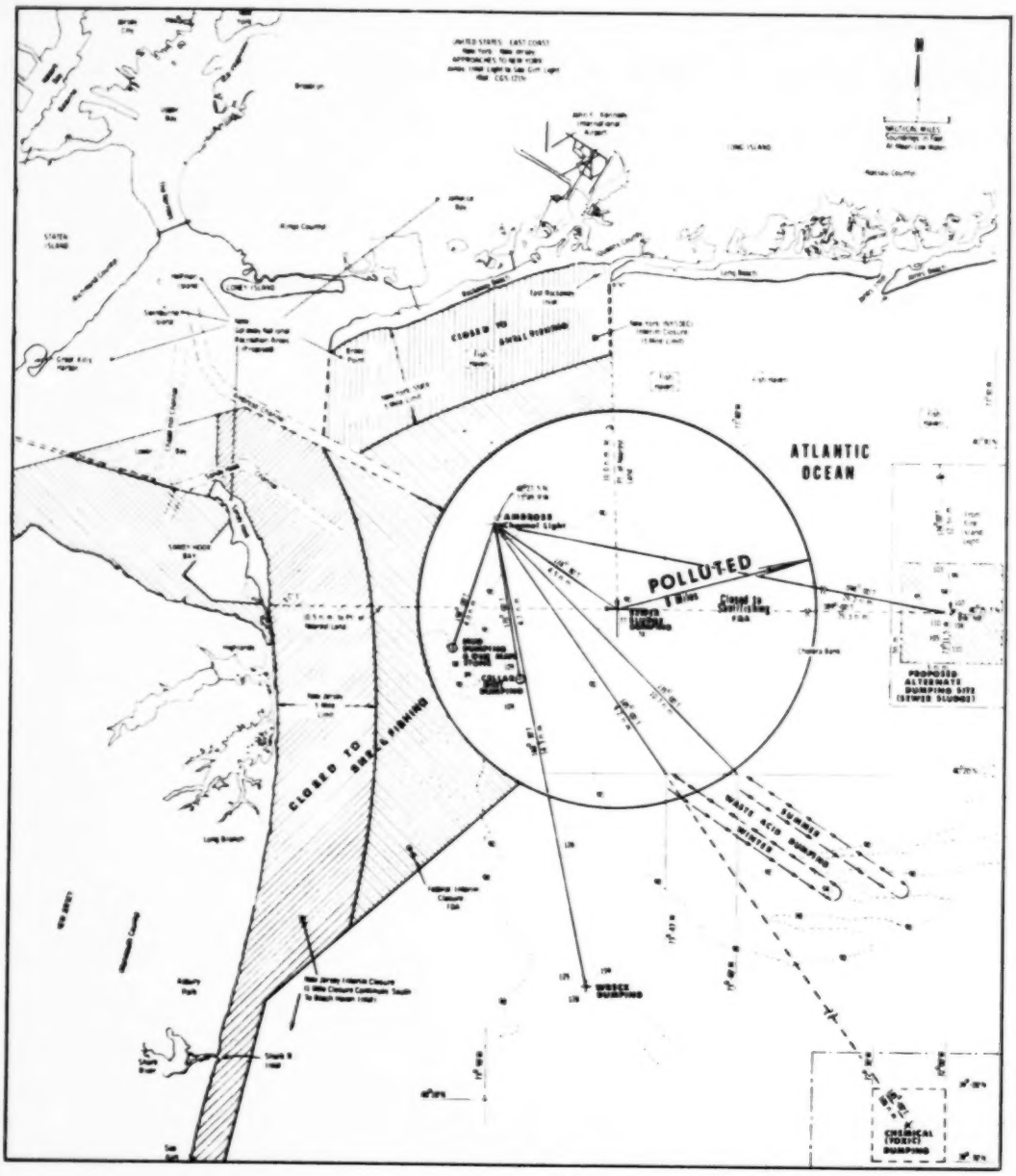

FIGURE 2 NEW YORK BIGHT DISPOSAL AREAS

INTERSTATE ELECTRONICS CORPORATION

quantities were minor until the Santee-Cooper River project was completed in 1942. Dredging requirements increased rapidly to the current 10 million cubic yards per year.

The dredge spoil disposal ground is located in proximity to the ship channel, the closest point being 1.5 nautical miles. Boundaries of the disposal zone were not fixed and no ocean limits set; therefore, no positive control of disposal operations were possible.

For the current volume and makeup of ocean waste disposal materials, there are no immediate problems associated with disposal at the site now being used. However, contaminated dredge spoil from the inner harbor may have adverse environmental effects if disposed in the area.

GULF COAST

The geographical area covered by this survey is the continental shelves and slopes bordering the Gulf of Mexico, from Port St. Joe, Florida to Port Isabel, Texas. This area coincides with the areas of dredging controlled by the Mobile, New Orleans, and Galveston District Offices of the U.S. Army Corps of Engineers.

Waste disposal within the survey area is primarily dredge spoils and chemicals. Currently, 40 million tons of dredge spoil are

dumped annually at 33 near-shore sites from three hopper dredges operated by the Corps of Engineers. More than 1.1 million tons of chemicals by bulk, and 6,650 tons in 55-gallon drums (500 pounds) are disposed of annually at two deep water sites designated for industrial wastes.

SOUTHERN CALIFORNIA

The findings of this study are also presented in Report 4460C1635, "Ocean Waste Disposal Practices in Metropolitan Areas of California". The Los Angeles and San Diego metropolitan areas use the ocean waters of Southern California for waste disposal. Materials dumped in the past and now prohibited are: explosives, radioactive wastes, refinery wastes, oil drilling wastes, and filter cake (a residue of algin extraction from locally harvested kelp).

Present dumping is concentrated in two areas west of Los Angeles. These sites are used for the disposal of trash and garbage; industrial wastes; and miscellaneous wastes - usually telephone slugs, contraband weapons and deactivated ammunition. Ocean pipeline disposal of treated sludge is used by Los Angeles and Orange counties. The Hyperion plant in Los Angeles pumps approximately 5 million gallons per day of sludge to the ocean via a seven mile long outfall.

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Since 1931, approximately 51,000 tons of trash and garbage collected from commercial vessels in Long Beach and San Pedro harbors, have been dumped southeast of Santa Catalina Island. Present annual disposal is 623 tons. Another site, 9.2 nautical miles north of Catalina Island is used for the disposal of industrial waste by-products characterized as extremely noxious. A three-year summary indicated that approximately 1.2 million pounds of these materials were dumped at this site.

Although the Southern California area is the home of major oceanographic laboratories and has many institutions engaged in ocean research, the existing disposal sites have not been specifically studied.

SAN FRANCISCO

The findings of this study are presented in depth in Report 4460C1635 "Ocean Waste Disposal Practices in Metropolitan Areas of California". San Francisco's long history of ocean dumping has in recent years been under close scrutiny by local and state regulatory agencies. As a result of the local activities, most ocean dumping has stopped either by direct regulation or because of monetary pressures and environmental concern.

The materials dumped offshore in the past have been refinery wastes, acid wastes, cannery wastes, radioactive wastes,

munitions, and dredge spoil. The present dumping activities in the San Francisco area are limited to a dredge spoil site, under U.S. Army Corps of Engineers administration.

The site is used for the disposal of material dredged from the main ship channel west of the Golden Gate bridge. Approximately 600,000 cubic yards of dredge spoil is dumped annually. The site is on a submerged sand bar which extends in an arc seaward of the Golden Gate at a distance of about five miles. Water depths range from 36-50 feet. A proposed 55-foot main ship channel depth would increase the site length to 3.5 miles with an annual maintenance quantity of 900,000 yards (projected).

The Army Corps of Engineers have conducted studies on the effects of the dredging and maintain a line of communication with all federal and state agencies. Continuous monitoring is not conducted. Samples of the dredge spoil are collected on an irregular basis during operations.

Recommendations have been made for a long-term study of the dredged channel and disposal site, including mandatory monitoring. Dredging should be scheduled during periods of the year that will minimize damage to marine life.

EXECUTIVE SUMMARY

PUGET SOUND

The geographical areas covered by this survey are the waters of the Strait of Juan de Fuca, Puget Sound, and the interconnecting inlets and adjacent bays south and east of the Canada boundary.

Although there are many outfalls discharging municipal and industrial wastes in the waters of Puget Sound, only dredge spoil is transported and dumped by vessels at near-shore sites. A barging operation takes refuse from Seattle to a shoreside landfill on the Tulalip Indian Reservation north of Everett. 225,000 tons per year of vanillin black liquor are disposed of in the Strait of Juan de Fuca. An explosive disposal site is located 80 miles west of Cape Flattery, but has not been used since 1970. Approximately 250,000 cubic yards of dredge spoils are dumped annually at twelve sites designated by the State of Washington, Department of Natural Resources.

Considerable data is available on the discharging of industrial wastes into Puget Sound via outfalls, but there is no public information on black liquor dumping operations at shallow disposal sites. There have been two meaningful studies in Puget Sound on the effects of dredging and spoil disposal.

It was recommended that a comprehensive study be conducted on the effects of spoil disposal at one of the presently approved

deepwater sites. The study would include monitoring of physical, chemical, biological, and geological oceanographic parameters for a period of at least one year at both the site and a nearby control area of similar character. Monitoring of both areas should continue after dumping operations for a minimum of two years in order to evaluate the concept of concentrating spoil disposal at a small site in deep waters (by comparison with previous studies) and to determine net changes resulting from spoil disposal at such a site by comparison with the nearby control area.

AN ATLAS OF OCEAN WASTE DISPOSAL SITES

A detailed atlas was prepared as report 446OC1545, "An Atlas of Ocean Waste Disposal Sites", which contains charts for each of the disposal sites listed in the Federal Register of May 16, 1973. Chart coordinates, site areas, authorized material types, navigation aids, and primary site management agencies are listed. The report also contains sections on nautical chart symbols and abbreviations, and electronic navigation aids that apply to ocean waste disposal control. Detailed information is presented in Report 446OC1629, "Navigation Aids for Ocean Waste Disposal Control".

The EPA Interim Criteria and Regulations were designed to be amended to meet changes in technology, national policy and

priorities, and physical geography. Therefore, the Atlas has been formatted to be readily revised. It is planned that the chart index will be updated periodically. Revised copies will be sent to all registered users of the Atlas. Figure 3 shows the preparation of a site chart. A typical chart, Site No. ODO212 is shown in Figure 4.

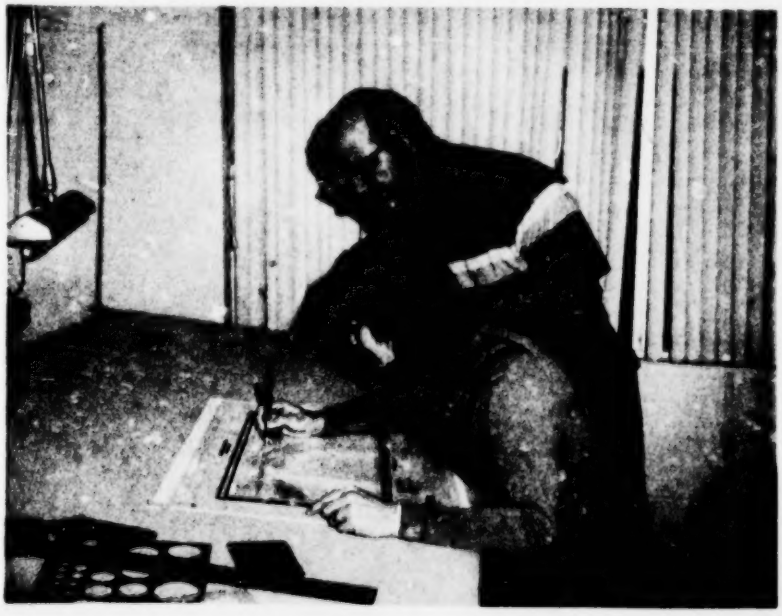
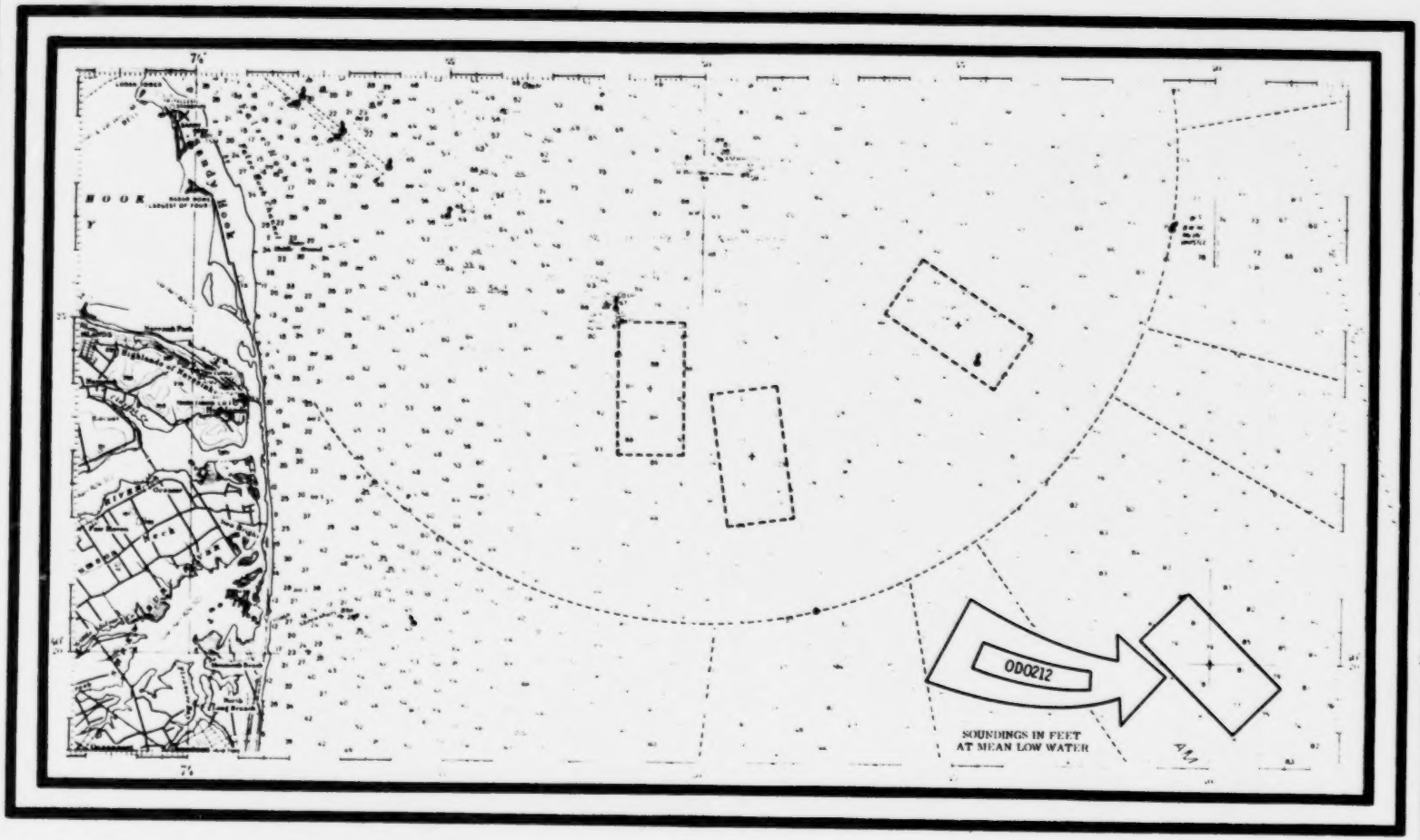


FIGURE 3 PREPARATION OF SITE CHART

U.S. ENVIRONMENTAL PROTECTION AGENCY
Ocean Disposal Program Office



Center Coordinates	40° 20' 00" N, 73° 40' 00" W
Area	2.0 Square Nautical Miles
Navigation Chart No.	NOS 1215
Local Navigation Aids	Decca, Loran A & C, Omega, RDF, CG Radar
Material Type	Waste Acid
Primary Management	EPA

INTERIM DISPOSAL SITE

September 1973

FIGURE 4

SITE NO. OD0212

INTERSTATE ELECTRONICS CORPORATION

GUIDELINES FOR THE DEVELOPMENT OF CRITERIA FOR CONTROL OF OCEAN WASTE DISPOSAL

Report 4460C1544 is the final document of the series. It addresses the problems of disposal site selection, control and monitoring of disposal operations.

Specific attention is given to the types of information required for control and recommended criteria for parameters included in the selection of disposal sites. Determining the overall site value are: human health considerations, impact on the food chain, fishing resources, recreation, aesthetics, and the economics of disposal. Methods of monitoring the disposal site including initial data acquisition, design of information systems and guidelines for long-term monitoring are presented. Control of ocean disposal operations is discussed from a standpoint of permit control and coordination, disposal operation control, and operational research requirements.

Documents prepared by Interstate Electronics Corporation, Environmental Engineering Division, under contract 68-01-0796 for the U.S. Environmental Protection Agency, Ocean Disposal Program, are:

DIRECTORY OF MANAGERS, ENGINEERS AND SCIENTISTS IN OCEAN WASTE DISPOSAL AND RELATED ENVIRONMENTAL SCIENCE FIELDS
Report No. 4460C1543
June, 1973
*PB 224 459/AS, $3.50 paper, $1.45 MF

A BIBLIOGRAPHY ON OCEAN WASTE DISPOSAL
Report No. 4460C1542
May, 1973
*PB 224 452/AS, $4.25 paper, $1.45 MF

OCEAN WASTE DISPOSAL IN SELECTED GEOGRAPHIC AREAS
Report No. 4460C1541
July, 1973
*PB 224 793/AS, $8.00 paper, $1.45 MF

OCEAN WASTE DISPOSAL IN THE NEW YORK BIGHT
Report No. 4460C1559
August, 1973
*PB 224 983/7AS, $4.50 paper, $1.45 MF

OCEAN WASTE DISPOSAL PRACTICES IN METROPOLITAN AREAS OF CALIFORNIA
Report No. 4460C1635
February, 1974

AN ATLAS OF OCEAN WASTE DISPOSAL SITES
Report No. 4460C1545
September, 1973

NAVIGATION AIDS FOR OCEAN WASTE DISPOSAL CONTROL
Report No. 4460C1629
February, 1974

GUIDELINES FOR DEVELOPMENT OF CRITERIA FOR CONTROL OF OCEAN WASTE DISPOSAL
Report No. 4460C1544
February, 1974

*These reports are available through the National Technical Information System, U.S. Department of Commerce, Springfield, Virginia 22151.